

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number
WO 2004/027868 A2

(51) International Patent Classification⁷: **H01L 27/00**,
G01R 31/28

(21) International Application Number:
PCT/IB2003/003629

(22) International Filing Date: 8 August 2003 (08.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02078908.7 20 September 2002 (20.09.2002) EP

(71) Applicant (*for all designated States except US*): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **LIFKA, Herbert** [AT/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **STROEX, Erik, A., H., M.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **BAKKER, Mark**

[NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **JONGMAN, Sietze** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **KLEIN, Markus, H.** [DE/DE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

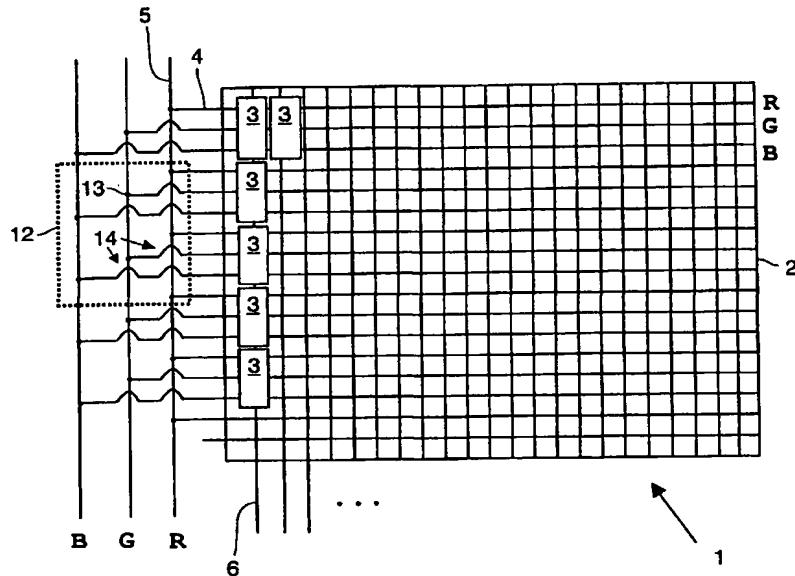
(74) Agent: **DEGUELLE, Wilhelmus, H., G.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ELECTRICAL DEVICE, A METHOD FOR MANUFACTURING AN ELECTRICAL DEVICE, TEST STRUCTURE, A METHOD FOR MANUFACTURING SUCH A TEST STRUCTURE AND A METHOD FOR TESTING A DISPLAY PANEL



WO 2004/027868 A2

(57) Abstract: The invention relates to an electrical device comprising a substrate carrying at least one component comprising at least one electrode, a first connecting line electrically connected to said electrode, wherein the first connecting line bridges a second connecting line by means of a crossover. The crossover is, at least at one side, bounded by an electrically insulating structure. The invention allows new testing methods and efficient lead-outs for an electrical device, such as electroluminescent display devices.

**Declaration under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU,*

TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/03629

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L27/00 G01R31/28

Rec'd PCT/PTO 18 MAR 2005

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L H05B G01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 414 249 B1 (VICKERS KENNETH G) 2 July 2002 (2002-07-02)	16-18, 21
A	figures column 5, line 5 – line 62 column 6, line 60 – column 9, line 3	1, 4, 9
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 10, 17 November 2000 (2000-11-17) -& JP 2000 200053 A (FUTABA CORP), 18 July 2000 (2000-07-18) abstract	16-18, 21
A	EP 1 075 166 A (HARNESS SYST TECH RES LTD ; SUMITOMO WIRING SYSTEMS (JP); SUMITOMO ELE) 7 February 2001 (2001-02-07) abstract; figures 3, 4	1, 4-6, 9, 12
		-/-

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

13 August 2004

Date of mailing of the international search report

23/08/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

De Laere, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/03629

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 936 344 A (NAGAYAMA KENICHI) 10 August 1999 (1999-08-10) cited in the application the whole document -----	1,4-6,9, 12
A	US 5 701 055 A (MIYAGUCHI SATOSHI ET AL) 23 December 1997 (1997-12-23) cited in the application abstract; figures 14-18 -----	1,2,5,9, 10,12,13
A	US 5 962 970 A (MIYAGUCHI SATOSHI ET AL) 5 October 1999 (1999-10-05) cited in the application the whole document -----	1,2,5,9, 10,12,13

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/03629

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 6414249	B1	02-07-2002	US	5598057 A		28-01-1997
JP 2000200053	A	18-07-2000	NONE			
EP 1075166	A	07-02-2001	JP EP	2001052859 A 1075166 A2		23-02-2001 07-02-2001
US 5936344	A	10-08-1999	JP	10012386 A		16-01-1998
US 5701055	A	23-12-1997	JP DE DE EP US	8315981 A 69608487 D1 69608487 T2 0732868 A1 5952037 A		29-11-1996 29-06-2000 14-09-2000 18-09-1996 14-09-1999
US 5962970	A	05-10-1999	JP DE DE EP	9102393 A 69612934 D1 69612934 T2 0767599 A2		15-04-1997 28-06-2001 06-09-2001 09-04-1997